satellites. It is apparently moving in the *opposite direction* from the other satellites. Whether this retrograde motion is real or only apparent cannot be told until more observations have been obtained.

Assuming its orbit to be nearly circular, its period of revolution would be about six months. Its real distance from the planet is approximately six million miles, or about five times that of the fourth satellite.

The sixth satellite has been estimated to be of the fourteenth photographic magnitude. Visually, it is probably from one half a magnitude to a magnitude brighter, or about the same brightness as BARNARD's fifth satellite.

As soon as sufficient observations have accumulated its orbit will be determined. It is now moving toward the planet about 1′ per day.

The last observation was obtained on January 28th.

January 30, 1905. C. D. PERRINE.

VISUAL OBSERVATION OF SATELLITE VI TO *JUPITER*.

Last Saturday night, January 28, 1905, the first opportunity presented itself to me to look for PERRINE's satellite to *Jupiter* with the 36-inch refractor. As the telescope had been at the disposal of the regular Saturday-night visitors earlier in the evening, the planet was already low in the sky. The atmospheric conditions also were unfavorable, though the sky was clear. The satellite was picked up easily at the first trial from the position predicted by the Crossley photographs on preceding nights, and in a few minutes' time the motion in Right Ascension made the identification certain.

The satellite was followed for nearly an hour, and the extreme settings showed an hourly motion in Right Ascension of about $+20''$, which is in good agreement with the photographic results. No attempt was made to secure an absolute position, as this can be better obtained from the photographic plates.

The bad seeing made magnitude estimates very uncertain, but, from the appearance of faint stars of known brightness, I would say that the satellite is about equal to a fourteenth-magnitude star.

So far as I know, this is the first time the satellite has been

seen with certainty, though Professor HUSSEY on one night early in the month saw an object near the predicted place of the satellite. Clouds interfered before motion could be observed.

R. G. AITKEN.

January 30, 1905.

A LIST OF NINE SPECTROSCOPIC BINARY STARS.

The following nine stars have been determined to be spectroscopic binaries, from observations made with the Mills spectrograph attached to the 36-inch equatorial. As is well known, the presence of an invisible companion in a star of this type is shown by its gravitational influence upon the visible star, causing the latter to revolve in an elliptical orbit around the center of mass of itself and the invisible companion. The velocity of the visible star in the line of sight therefore varies, and the spectrographic determination of the velocities at all points in the orbit enables us to determine the form of the orbit and its position in the orbit-plane. The position of the orbit-plane remains undetermined.

	Discovered by
α *Andromedæ*	HEBER D. CURTIS.
ξ *Ceti*	W. W. CAMPBELL.
γ *Geminorum*	KEIVEN BURNS.
α_2 *Geminorum*	HEBER D. CURTIS.
η *Boötis*	JOSEPH H. MOORE.
ξ *Serpentis*	HEBER D. CURTIS.
ζ *Lyræ*	HEBER D. CURTIS.
τ *Sagittarii*	HEBER D. CURTIS.
71 *Aquilæ*	HEBER D. CURTIS.

α_2 *Geminorum*, the brighter component of *Castor*, is of special interest. Dr. CURTIS has secured about twenty-five plates of its spectrum, from which it appears α_2 and the invisible companion revolve once around in their orbits in approximately 9.27 days. The fainter component of *Castor* (α_1) was discovered to be a spectroscopic binary in 1896, by Dr. BELOPOLSKY, at Pulkowa, Russia, with a period of 2.93 days. The system of *Castor* therefore comprises, so far as known at present, two visible and two invisible stars. Dr. CURTIS is engaged in a study of the entire system, based upon our spectrographic observations. It may be recalled that *Castor* is the double